ALABAMA PRISON ARTS + EDUCATION PROJECT

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Dear Student, Artist, Thinker,

I remember the first time I saw a road sign for Coaling, Alabama, a small town in the west-central part of the state. It was also the first time I imagined **coal** as a verb, or an action; something dynamic, something with motion. Throughout childhood, coal had always seemed so solid: hard to dig up, hard to see through, even hard to find someone who didn't feel strongly about its role in the world. I started to wonder if you could go "coaling" like you go fishing. What would that look like?

Well, I was quick to learn that the name Coaling was short for Coaling Station, a community that first appeared on the US Census back in 1880. And coaling stations were relatively common then — these were places trains or even ships might stop to refuel. To re-*coal*, so to speak.

I also learned — solid as it is — that coal is chock-full of action. It's a fossil of motion, and of history. In fact, we call coal (along with oil and natural gas) a *fossil fuel*, precisely for how it's formed. As we'll read, prehistoric plant matter that once harnessed the sun's energy becomes coal after being exposed to extreme heat and pressure for millions of years. Talk about action.

And look at the waves coal still makes once we dig it up. We burn coal to release its energy, and it continues to change, and to change the world around it. Coal moves machines and economies; its heavy hand weighs on the environment, and on our health. Even the graphite inside a pencil might be considered a kind of coal — it's entirely made of carbon, a cousin of the dark chunks humans have long used to heat homes. Now consider what energy has been released when a pencil is put to the page. Think of the motion *that* fossil still makes. Next time you're writing, ask yourself: could you call that *coaling*?

Kyes Stevens and the APAEP Team

"Perhaps time's definition of coal is the diamond." **KHALIL GIBRAN** // Lebanese-American writer, poet and visual artist

WORDS INSIDE

FROM "ALABAMA COAL-FIRED POWER PLANTS"...

emitters | machines, devices, or organisms that discharge something (especially a gas or radiation)

iteration | a version or an incarnation

poignant | deeply affecting or being to the point

megawatt | a unit of power equal to one million watts, especially as a measure of the output of a power station

megabyte | a unit of digital information loosely equal to one million bytes

FROM "FOR THEM, A COAL PLANT"...

Superfund Site | polluted locations in the United States requiring a long-term response to clean up hazardous material contaminations. They were designated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

hydrocarbons | naturally-occurring compounds, composed exclusively of hydrogen and carbon atoms, that and form the basis of crude oil, natural gas, coal

disparate | essentially different; no comparison

HISTORY

Coal Mining

BY JAMES SANDERS DAY | University of Montevallo | *Encyclopedia of Alabama*
Published February 18, 2008 | Updated January 4, 2021

Experiencing both boom and bust, the coal-mining industry has affected the lives of thousands of people in northern and central Alabama. The industry changed the face of the state—geographically, economically, socially, politically, culturally. Largely obscured today by reclamation projects, pine trees, and kudzu, the mining districts of Alabama are the remnants of an industrial boom that vastly expanded the state's economy beyond its traditional agricultural base and shifted the political center away from its heart in the Black Belt.

The discovery of coal along Alabama's rivers can be traced back to 1815, when several veterans of the Battle of New Orleans made their way into present-day central Alabama. One group of early settlers, led by Maj. Jonathan Mahan, found a Creek Indian village at the confluence of three creeks. Two-thirds of the party settled in the town and married Creek women; six others continued northward but returned later to stake their land claims and to create the settlement of Brierfield. Later, the Mahan family convinced ironmaster Jonathan Ware to build a forge along the waterway that they dubbed Mahan Creek.

Another account credits the initial discovery of coal to two young boys on a hunting expedition. Reportedly, Jonathan Newton Smith and Pleasant Fancher were camping near the Big Cahaba River in the early 1820s. They built a firepit of stones, cooked supper, and then drifted off to sleep. Smith later awakened to find the "stones" on fire. Frightened, the boys raced home in the dark, but later realized that they must have inadvertently used lumps of coal. The stream that flowed into Dailey's Creek became known as Coal Branch. To the north, Levi Reid and James Grindle settled at the Locust Fork of the Warrior River, where they found plentiful coal deposits.

Early Coal Mining Efforts

Early accounts suggest that numerous citizens of Bibb, Blount, Jefferson, Shelby, Tuscaloosa, and Walker Counties collected coal from this region as early as the 1830s. During the 1840s, Ambrose Doss and David Hanby attempted to transport flatboats loaded with coal from the Warrior basin to Mobile, but river shoals complicated their efforts. Interested parties soon instituted a more systematic approach, and geologists, mining engineers, and entrepreneurs ultimately discovered four coal fields in Alabama—the Warrior, the Cahaba, the Coosa, and the Plateau. These deposits represent the southern end of the Appalachian coal field, which spans nearly 70,000 square miles and extends from Pennsylvania and Ohio to central Alabama. Later historical summaries, based on reports by state geologist Michael Tuomey in the 1850s, indicated that the first systematic underground mining occurred in the Cahaba field near Montevallo in 1856. Most accounts identify the Alabama Coal Mining Company (ACMC) as the first coal-mining enterprise in that area, but personal records indicate that William Phineas Browne, founder of the Little Cahaba Iron Works, used slave labor to mine coal in the Montevallo area as early as 1849. According to industrial historian Ethel Armes, approximately 200 men were involved in the coal trade in Shelby County by 1850.

Nineteenth-century miners entered the mines equipped with the tools of their trade: picks, shovels, pry bars, breast augers, saws, axes, and tamping bars. Frequently, mine owners provided the necessary equipment, financing miners' purchases against future wages. Three-tiered dinner buckets contained their food and drinking water, and kerosene lamps provided dim, smoky lighting. After the turn of the twentieth century, though, carbide lamps replaced the kerosene lights. In the 1930s and 1940s, battery-powered lamps eliminated the need for an open-flame lantern.

In slope and shaft mines, miners removed coal in a four-step process: undercutting, drilling, blasting, and loading. First, miners used picks to carve a three to four foot wedge into the lower part of the face of the coal seam, usually on their knees or lying on their sides. Next, miners used a 5½-foot-long auger with a U-shaped crank to drill holes in the coal face, choosing the location and angle of each hole to maximize the effect of the blast. Miners then blasted the coal from the seam with small black powder charges. After the blast, they returned to the face and shoveled the lumps into trams or cars, each with a one- to two-ton capacity. Mules then pulled five to ten car loads along tracks, and wire ropes or cables hoisted the cars to the mine entrance. Above ground, at the "tipple," hickory "sprags" immobilized the wheels, checkweighmen weighed each car and credited tonnage to respective miners, and "day men" dumped the coal. Mechanical shakers separated large and medium coal lumps from each other, and smaller pieces, often called nut coal and steam or slack coal, were also separated out. ●

?

I COME FROM A MINE AND GET SURROUNDED BY WOOD. **WHAT AM I?**

HOW DID AN INTROVERTED ENTREPRENEUR SUCCEED IN THE COAL INDUSTRY?

doyouremember.com
riddlewot.com

Edited for clarity and space

ENERGY

Alabama Coal-Fired Power Plant Shifts from Megawatts to Megabytes

Google is paying for the clean energy makeover

BY DANIEL CUSICK | ClimateWire, as seen in *The Scientific American* | June 25, 2015

A hulking coal plant in north Alabama that has generated power for the Tennessee Valley Authority for 60 years will soon be retooled into a hulking data center for Google Inc., the California Internet giant with serious clean-energy bona fides.

The transition of the Widows Creek Fossil Plant near Stevenson, Ala., into Google's 14th global data center marks the end of an era for what was one of the nation's largest coal-fired power plants and one of the Tennessee Valley's largest emitters of carbon dioxide and other air pollution.

In its new iteration, Widows Creek, with its extensive network of transmission and distribution lines, will become an importer of clean energy from outside the state, according to Patrick Gammons, Google's senior manager for data center energy and location strategy.

"Since the 1960s, Widows Creek has generated power for the region — now the site will be used to power Internet services and bring information to people around the world," Gammons wrote.

"Data centers need a lot of infrastructure to run 24/7, and there's a lot of potential in redeveloping large industrial sites like former coal power plants," Gammons added. "Decades of investment shouldn't go to waste just because a site has closed; we can repurpose existing electric and other infrastructure to make sure our data centers are reliably serving our users around the world."

TVA will partner in the $600 million project by helping Google both identify and deliver clean energy resources from outside the state. Google will also become TVA's 12th directly served customer, along with a host of chemical plants, steel mills and other large industrial power consumers.

Alabama, long dependent on coal, gas, nuclear and hydropower for electricity, has no sizable renewable energy production. Alabama Power Co., the state's largest utility, has power purchase agreements to import wind energy into the state, but the state has no renewable portfolio standard, and its only wind farm proposal to date was withdrawn last August after its developer, Pioneer Green Energy, drew lawsuits from property owners and the state legislature imposed tough restrictions on setbacks and permitting.

TVA produces energy from 18 wind turbines built atop Buffalo Mountain near Oak Ridge, Tenn., and it has installed small solar photovoltaic systems at 14 locations throughout its territory, including two sites in Alabama. TVA is also one of the nation's largest producers of hydropower, which like nuclear generation emits no greenhouse gases but has other environmental downsides.

At a press conference at Widows Creek, Bill Johnson, the Knoxville, Tenn.-based utility's president and CEO, called the Alabama data center announcement "a big day for TVA."

"This facility has served TVA well since it started operating in 1952, so the decision to close Widows Creek was not easy and is especially hard on our employees and their families," Johnson said. "We are thankful for this exciting new opportunity for jobs in northern Alabama."

Environmentalists who have challenged the world's large Internet technology firms, such as Google, Microsoft, Yahoo, Facebook, Apple and Amazon, to work harder to adopt clean power sources for their sprawling data centers praised Google's announcement as a hallmark for converting a long-standing environmental problem into an innovative solution.

"Google's data center in Alabama is a poignant symbol of how quickly our energy economy can change for the better, and shows that even in regions that are not yet maximizing their renewable energy potential like the Southeast, major internet companies want the ability to power their facilities with renewable energy," David Pomerantz, a senior climate and energy campaigner for Greenpeace, said in a statement.

The last power from Widows Creek is expected in October, when the plant's last operating unit shuts down after a phased eight-unit closure that began in 2012. When fully operational, Widows Creek produced upward of 1,600 megawatts and powered much of TVA's north Alabama grid. ●

?

TWO MINERS BOTH COME BACK HOME FROM WORK IN AN ELEVATOR. ONE MINER HAS SOOT ALL OVER HIS FACE, BUT THE OTHER HAS A CLEAN FACE. THE ONE WITH THE CLEAN FACE WIPES IT WITH A HANDKERCHIEF. THE OTHER DOES NOTHING. **WHY?**

riddles.com

Edited for space

MATHEMATICS

Sudoku

#81 PUZZLE NO. 5062659

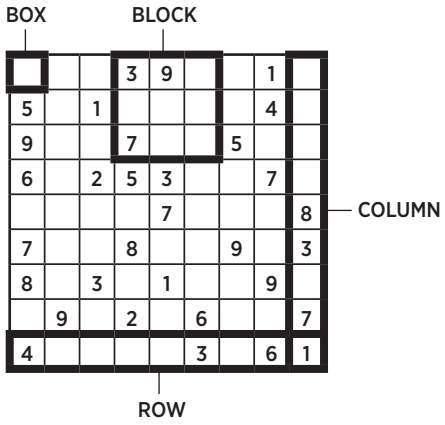
7	8							
			7	6		1		
	5			3				9
		8		1			2	
		9			5	6	8	
			8				1	4
5								
		2	1				4	7
	9			7				

#82 PUZZLE NO. 521157

						2		
	8	4						
7		2	4					
					3	4		7
	2	7				6		
1				4			8	5
6	9		7				3	8
	4		6					
			5					

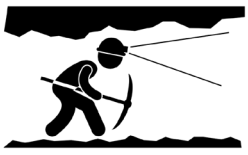
SUDOKU HOW-TO GUIDE

1. Each block, row, and column must contain the numbers 1–9.
2. Sudoku is a game of logic and reasoning, so you should not need to guess.
3. Don't repeat numbers within each block, row, or column.
4. Use the process of elimination to figure out the correct placement of numbers in each box.
5. The answers appear on the last page of this newsletter.



What the example will look like solved

2	4	8	3	9	5	7	1	6
5	7	1	6	2	8	3	4	9
9	3	6	7	4	1	5	8	2
6	8	2	5	3	9	1	7	4
3	5	9	1	7	4	6	2	8
7	1	4	8	6	2	9	5	3
8	6	3	4	1	7	2	9	5
1	9	5	2	8	6	4	3	7
4	2	7	9	5	3	8	6	1



"You've never seen dark 'til you've seen dark in a coal mine."

TOM BENNER // Former Director of the Illinois Department of Natural Resources

Icons from the Noun Project

DID YOU KNOW?

The **amount of energy** produced by the sun in a two-week period equals the combined stored energy of all the coal, iron, and natural gas reserves known to humans.

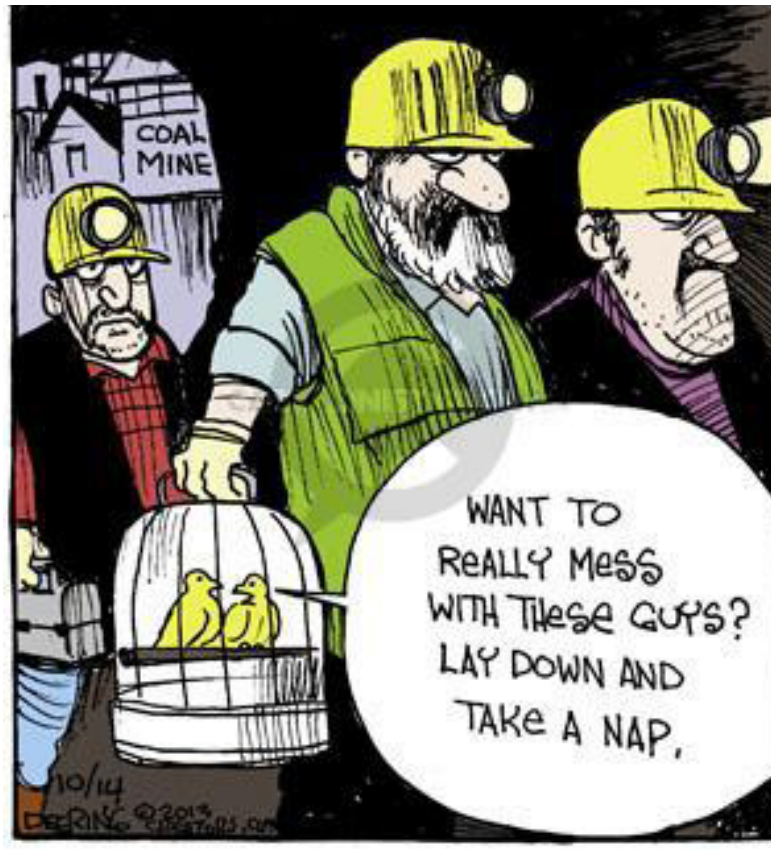
The ash that is a **by-product of coal combustion** is used as fillers for things such as tennis rackets, golf balls and linoleum.

The energy we get from coal today comes from the energy that **plants absorbed from the sun** millions of years ago.

Tinnunculite is a naturally occurring material that only forms when **falcons poop** directly into burning coal mines as they fly.

It is customary and considered lucky in Scotland and the north of England to **give coal as a gift** when welcoming in the New Year, representing warmth for the year to come.

Source: miningforschools.co.za



"The relevant questions now are: How do we move beyond coal? How do we bring new jobs to the coal fields and retrain coal miners for other work? How do we inspire entrepreneurialism and self-reliance in people whose lives have been dependent on the paternalistic coal industry?"

TOM BENNER // Former Director of the Illinois Department of Natural Resources

Idiom

"In the same vein"

Meaning similar, of the same kind, or along the same lines

Origin The original phrase is "It's in a similar vein," which may have started in mines. Ores naturally formed long streaming deposits called veins. Miners may have used the phrase to effectively communicate the locations of each separate vein. So if a miner uncovered what looked like two different deposits, a senior miner may come down and tell him that one deposit is "in a similar vein" to the other.

Source: english.stackexchange.com | *Edited for clarity*

THE ROMANS USED TO **WEAR COAL** AS JEWELRY, USE IT IN BLACKSMITHS' FORGES, FOR HEATING THEIR SOLDIERS' FORTS AND MAINTAINING A PERPETUAL FIRE AT MINERVA'S SHRINE IN THE CITY OF BATH.

THE TITANIC'S COAL STORES HAD BEEN **BURNING FOR WEEKS BEFORE SHE SET SAIL**, DAMAGING THE STARBOARD SIDE OF THE SHIP WHERE THE ICEBERG HIT. THE FIRE DAMAGED THE HULL ENOUGH TO BE A LARGE CONTRIBUTING FACTOR IN WHY THE ICEBERG CAUSED SUCH DAMAGE.

ART + CULTURE

Banking Coal

BY JEAN TOOMER

Whoever it was who brought the first wood and coal
To start the Fire, did his part well;
Not all wood takes to fire from a match,
Nor coal from wood before it's burned to charcoal.
The wood and coal in question caught a flame
And flared up beautifully, touching the air
That takes a flame from anything.

Somehow the fire was furnaced,
And then the time was ripe for some to say,
"Right banking of the furnace saves the coal."
I've seen them set to work, each in his way,
Though all with shovels and with ashes,
Never resting till the fire seemed most dead;
Whereupon they'd crawl in hooded night-caps
Contentedly to bed. Sometimes the fire left alone
Would die, but like as not spiced tongues
Remaining by the hardest on till day would flicker up,
Never strong, to anyone who cared to rake for them.
But roaring fires never have been made that way.
I'd like to tell those folks that one grand flare
Transferred to memory tissues of the air
Is worth a like, or, for dull minds that turn in gold,
All money ever saved by banking coal.

poetryfoundation.org

An important figure in African-American literature, Jean Toomer (1894—1967) was born in Washington, DC, the grandson of the first governor of African-American descent in the United States. A poet, playwright, and novelist, Toomer's most famous work, *Cane*, was published in 1923 and was hailed by critics for its literary experimentation and portrayal of African-American characters and culture.

WRITING PROMPT

Banking coal, if you're not familiar with the term, refers to the practice of allowing the coals to burn at a lower temperature (often by limiting the available oxygen) so as to make them last longer. The heat may be lesser, but it persists through the night, and allows a new fire to be started in the morning. Write about a time when slow persistence proved more helpful than a burst of fire and energy.

Word Search

L	E	D	E	C	A	N	R	U	F	U	I	K	U
D	P	Q	O	T	G	S	R	C	T	N	A	E	L
L	O	U	D	S	D	L	A	K	S	T	K	R	E
O	L	E	Q	G	D	R	E	L	F	A	T	I	U
G	R	S	L	R	E	F	H	W	R	E	O	O	W
E	S	T	D	G	C	L	A	E	L	L	N	A	Y
P	L	I	N	R	I	I	S	O	E	L	G	S	R
F	D	O	M	A	P	C	R	R	L	U	U	H	O
F	L	N	D	N	S	K	L	E	E	D	E	E	M
A	N	A	A	D	P	E	K	P	I	L	S	S	E
A	S	N	M	D	L	R	I	O	M	C	N	E	M
F	I	I	E	E	D	R	I	D	O	O	W	S	F
Y	C	D	E	R	A	L	F	L	W	A	R	C	L
P	F	L	C	O	U	D	S	M	D	R	A	F	E

FLAME
DULL
QUESTION
FLICKER
RIPE
FLARED
GRAND
RAKE
SPICED
WOOD
MEMORY
GOLD
TONGUES
FURNACE
ASHES
CRAWL

WORD PLAY

A Rebus puzzle is a picture representation of a common word or phrase. How the letters/images appear within each box will give you clues to the answer! For example, if you saw the letters "LOOK ULEAP," you could guess that the phrase is "Look before you leap." *Answers are on the last page!*

PROFILE

This Alabama Bright Light Mines History Instead of Coal

BY KARIM SHAMSI-BASHA | *Alabama NewsCenter* | October 6, 2017

All of us at times search for our purpose in life.

What if your father and grandfather were coal miners in Kentucky? What if your playgrounds while growing up included Birmingham's Valley View Mine on Green Springs Avenue? And what if you loved being underground? What would be your purpose in life?

To be the historian at Red Mountain Park in Birmingham.

Jeff Newman fills that role at the park, which introduces its visitors to a rich history of iron and mining, along with 15 miles of hiking and biking trails featuring two city overlooks, three tree houses, the six-acre, off-leash Remy's Dog Park, a zipline course, a climbing tower and more.

"My father and grandfather were coal miners in Hazard, Kentucky, and my mother moved me from there because she didn't want me in holes in the ground. It must be genetic," Newman said.

To understand why Red Mountain Park makes perfect sense for Newman, it helps to know some history:

Alabama achieved statehood in 1819, and residents along Red Mountain in those early days noticed red dust everywhere. It wasn't until a couple of decades before the Civil War when people recognized what was under the dirt: iron — perfect for cannons and muskets. In 1863, the first mine, named Eureka 1, was opened on Red Mountain. This is what Birmingham, founded eight years later, would become known for: a leading iron- and steel-producing city.

With a father and grandfather who mined coal, Newman was always interested in mining. When he was 12, he began exploring the Valley View Mine across from where he grew up on Green Springs Avenue. He became fascinated with Birmingham's rich mining history.

"During high school, I started going to the library and doing research about all the different companies and the people who ran them and worked for them," Newman said. "I started hiking Red Mountain, but I was limited to the area between Vulcan and Green Springs Highway — the old mineral railroad and red gap branch, which is now part of the Vulcan Hiking Trail. I spent about 10 years hiking the mountain."

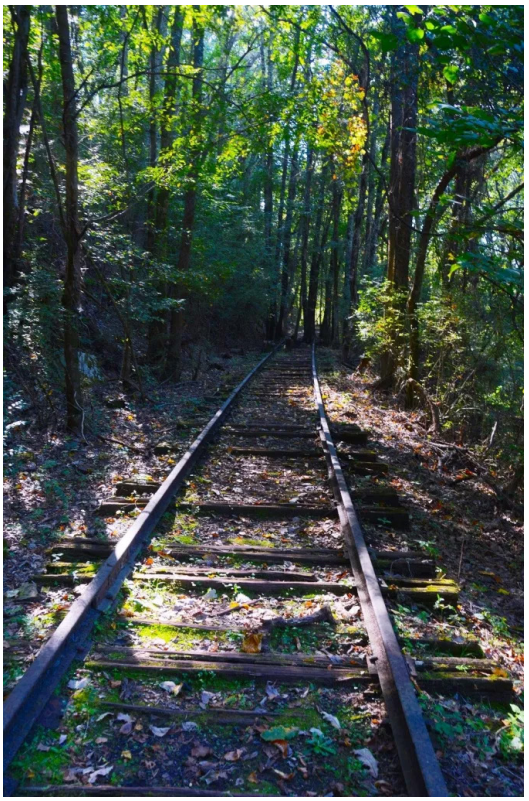
Red Mountain Park opened in 2010 and is filled with historic markers that tell the story of the park and its splendid history. When the park opened, Newman had retired from BellSouth.

"I heard the news that they were going to build Red Mountain Park. I thought, 'Here it is. This is why I've been doing this all this time. I can finally use all of this information,'" Newman said. "I went down and started volunteering with the Friends of Red Mountain Park and eventually got put on their board of directors. Now I do maintenance, but mostly the history of the park."

Nothing brings Newman more joy than telling people the stories of the mountain's mining past.

"I can't think of a better place to spend my time. They pay me to do it, but, gosh, I'd do it for nothing, I love it. I really enjoy the history of it," he said.

Newman speaks of the four companies that mined the mountain: Woodward, U.S. Steel, Tennessee Coal and Iron, and Republic Steel. He gives tours of the park and teaches about the legacy of those companies and the mines they worked.



Tracks going up to the Smythe/No. 12 Mine. The rails came from the Tennessee Open Hearth Rail Mill furnace in Ensley in 1908, and are now part of Red Mountain Park

Image byKarim Shamsi-Basha / Alabama NewsCenter

The park is also a wonderful place to spot wildlife. Newman mentioned deer, raccoons, armadillos, hawks, bard owls, bobcats, coyotes, squirrels, snakes and a variety of birds.

Katie Bradford, director of Community Relations and Public Relations at Red Mountain Park, joins Newman in his enthusiasm for the park and what it offers the people of Birmingham and Alabama.

"Right now we are tracking over 11,000 visitors a month. Red Mountain Park is constantly growing, so each time you come back there is something new, whether it's a trail or a field trip or an offering like yoga, which we're starting (this) month," Bradford said. ●

ENVIRONMENTAL JUSTICE

For Them, a Coal Plant Bribery Scandal is Personal

SEAN REILLY | *E&E News* | November 21, 2018

When Johnnie Mae Parrish was growing up on the northern edge of this city, the air pollution from nearby industries was so foul that she slept with a wet washcloth over her nose.

Decades later, many of those plants are gone. But to Parrish, a 69-year-old retired nursing assistant who lives across the street from her childhood home in Collegeville, a largely African-American enclave, the wounds linger.

She still suffers from asthma, her fading neighborhood is part of a Superfund site, and she fears that airborne soot attributed to companies still in business continues to taint her property.

A few years ago, the EPA unveiled plans for prioritizing a cleanup in her neighborhood, where the soil is laced with lead, arsenic and hydrocarbons. But Drummond Co. Inc., an influential coal firm eager to skirt financial responsibility, orchestrated an opposition campaign.

A large chunk of Alabama's political establishment backed the energy company.

To Parrish, the power of corporate money is one factor behind the delay. She also sees a more elemental force at work.

"It's definitely a race issue," she said last weekend, touching her dark brown arm for emphasis as several grandchildren played in her front yard, which has had contaminants removed. "Everybody treats this community bad."

In 2015, other residents filed a civil rights complaint asking the EPA to cut off funding for the county health department after it renewed the air permit for a Drummond coke plant. The department, they alleged, was allowing plant emissions that had a "disparate impact" on black people living nearby. EPA has yet to act on that languishing complaint.

Now, questions of unequal treatment are flaring again following a corruption scandal that ensnared a Drummond executive, a prominent attorney and Trey Glenn — who just stepped down as head of EPA's Southeast regional office.

While "poor, black people" have been dying of pollution-related causes for years, their plight is getting fresh attention, said Richard Dickerson, who worked for EPA as a political appointee during the Clinton administration and is now a consultant in Birmingham.

Political allies

The plant at the center of the controversy, known as ABC Coke, has been a smoke-belching fixture of Birmingham's landscape for a century.

Following a criminal trial this summer, a federal jury convicted the Drummond executive, David Roberson, and Joel Gilbert, who had been a partner in the law firm of Balch & Bingham LLP, of bribing a state lawmaker to oppose the Superfund National Priorities List proposal.

Listing the site could free up more money to further the cleanup already underway. It might also leave Drummond — which the federal government has named as one of the companies that may bear responsibility for the contaminated soil — on the hook for millions of dollars in cleanup costs and fines.

Drummond, a privately held corporation headquartered in Birmingham, has long been an influential player in Alabama politics, known for hard-knuckled tactics and generous campaign contributions.

The roughly three-week trial showed the degree to which Alabama politicians were willing to do the company's bidding. Then-Gov. Robert Bentley (R), most of the state's congressional delegation and a majority of state legislators went on record against the proposed NPL listing.

The ABC Coke plant in Birmingham, Ala., is at the center of a scandal that appears to have ensnared a senior EPA official

Image by Sean Reilly/E&E News

In an October 2014 letter, for example, six of Alabama's seven House members voiced concern that the EPA proposal "is unsupported by reliable evidence and that it may undermine economic development in the area."

Campaign finance records show that all had previously received thousands of dollars in contributions from Drummond and Balch & Bingham.The lawmaker who didn't sign the letter was Rep. Terri Sewell (D), the delegation's sole black member.

Indicted EPA official

Glenn, a former ADEM director, was then a private consultant closely involved in the Drummond

WHAT IS BLACK WHEN YOU BUY IT, RED WHEN YOU USE IT, AND GRAY WHEN YOU THROW IT AWAY?

punstoppable.com

campaign. Earlier this month, he and a partner in the consulting firm were indicted for allegedly violating the state ethics law. While strongly asserting his innocence, Glenn quit his EPA post over the weekend.

'It would just rain soot'

Collegeville, reportedly named for a school that was not an institution of higher learning, is one of three mostly black communities covered by the Superfund designation, encompassing about 2,000 properties in all. The area is embedded in what was once a sprawling heavy-industry hub that was home to manufacturers of pig iron, pipe and coke. The last is a coal derivative used by steelmakers and foundries.

The black workers who supplied the bulk of the labor mostly lacked cars so they had to live nearby, said Vivian Starks, born in the area in 1940 and now the president of the Collegeville Neighborhood Association. Further hemming them in was the rigidly enforced code of racial segregation in place at the time.

Asked whether that legacy continues to reverberate in the pollution controversy, Starks said, "Of course it does."

"If we can put a man on the moon," she asked, "why the devil can't we do something about these emissions?"

Of the people living in Collegeville's ZIP code, about 90 percent are black and almost half live below the poverty line, according to U.S. Census estimates.

As elsewhere in Birmingham, air quality was abysmal before the passage of pollution control laws. "Man, in the evening time, it would just rain soot and stuff down on your car," said Charlie Powell, a former resident who now heads People Against Neighborhood Industrial Contamination (PANIC), an advocacy group that's seeking government help to buy out any homeowner who wants to leave. "You'd have to wash it every day."

Under EPA's hazard ranking system, an area must score at least 28.5 to qualify for inclusion on the National Priorities List. The Birmingham site merited a 50, the agency said in making the 2014 proposal.

Since then, cleanup has been underway, with recent work demarcated by the orange mesh fencing that rings some yards. While Parrish and other residents were generally satisfied with the caliber of the cleanup, they question how much long-term good it will do if the soot-forming emissions that they attribute to ABC Coke and other plants are not addressed.

James Pinkney, a spokesman for EPA's Southeast regional office, didn't dismiss those concerns. However, the majority of contamination found so far comes from "fill dirt" brought in by neighboring industries, Pinkney said in an interview.

Neighbors outraged

The anger unleashed by the Drummond scandal was on sometimes raucous display Thursday at a public hearing on the Jefferson County Department of Health's bid to renew the ABC Coke plant's air permit with no changes.

Some 70 people packed a drab conference room in downtown Birmingham. Of the approximately 20 who spoke, all opposed reauthorizing the permit in its current form. The voices of some quavered as they recalled family members and others who fell ill or died from causes that they blamed on pollution.

The coal firm's efforts to avoid cleanup costs were "despicable," said Brita Brudvig, a life insurance company actuary. "I sincerely hope that you prove that this body is not another thing that has been bought out by Drummond and Balch." ●

Edited for clarity and space

RANDOM-NEST

How Coal is Formed

BY MIHAI ANDREI | *ZMESCIENCE.COM* | AUGUST 30, 2018 | EDITED FOR SPACE

Coal is still the largest source of energy for the generation of electricity worldwide, though it's being phased out in many parts of the world due to its impact on the climate. But if we want to understand the origins of coal, we have to look back much further — to a period called the Carboniferous.

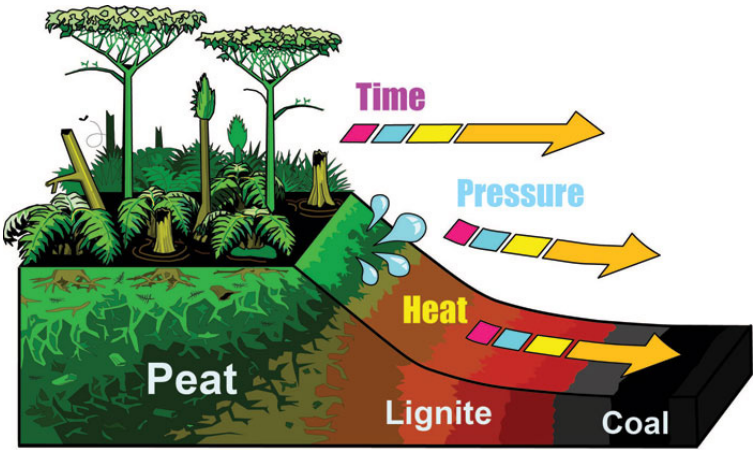
The Carboniferous (after the Latin name of coal) took place approximately 360 to 300 million years ago. Amphibians were the dominant land vertebrates and vast swaths of huge trees covered the singular mega-continent Pangaea. The atmospheric content of oxygen was at its highest level in history: 35%, compared with 21% today; all the conditions were ripe for the formation of massive coal beds.

Coal never formed before the Carboniferous, and very rarely formed after it. Two conditions are regarded as crucial for this event:

➽ the emergence of **wooden trees with bark**; a large quantity of wood was buried in this period because mushrooms and microorganisms hadn't yet "figured out" how to decompose trees. After they did, coal formations became much rarer.

➽ the **lower sea levels**; the decrease of the sea level created many swampy environments in what is today North America and Europe. These swamps were vital for coal formation.

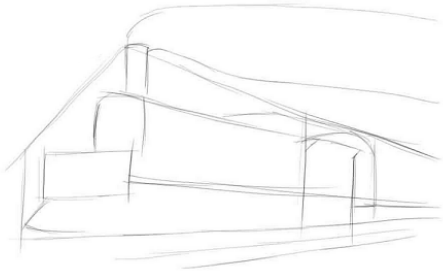
In time, these trees were buried. As they went deeper and deeper, temperature and pressure started building up and started to transform the coal.



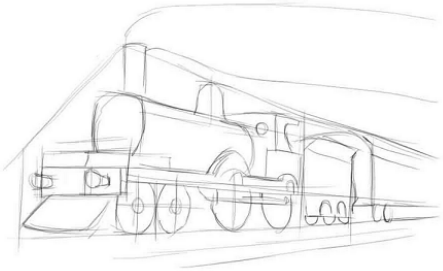
Coal Formation (Image Credit: Kentucky Geological Survey)

HOW TO DRAW A MOVING TRAIN

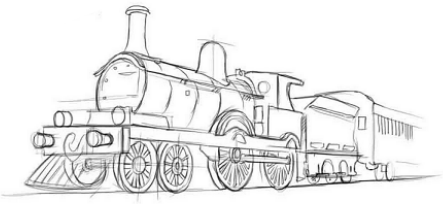
1. First sketch the shape of a moving train with long extended lines.



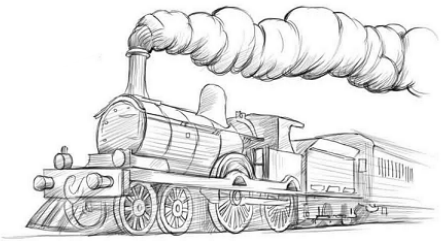
2. Add many wheels, front lights and other details of a locomotive



3. Show every detail paying special attention to the wheels. Erase extra lines.



4. Use hatching (many parallel lines) to show the beautiful smoke that comes out of the pipe.



artprojectsforkids.org

Words of Encouragement

I recently learned about a phenomenon that astronauts describe when they see planet Earth from space for the first time. "The Overview Effect," as explained by journalist, broadcaster and author, Krista Tippett, refers to:

"the experience of seeing firsthand the reality of the Earth and space, which is immediately understood to be a tiny, fragile ball of life hanging in a void, shielded and nourished by a paper-thin atmosphere. From space, national boundaries vanish. The conflicts that divide people become less important and the need to create a planetary society with the united will to protect this pale blue dot becomes both obvious and imperative."

I like to imagine being in the astronauts' shoes, staring out a little window and marveling at this new perspective. I imagine it's powerful, beautiful, and a little terrifying. If I am being honest, it's easy for me to lose that perspective, to become preoccupied with everything going on "in my own world." I forget about the connectedness "The Overview Effect" suggests. Now, I'm not going to space any time soon. In all likelihood, I'll never experience the "Effect" firsthand. But I have my imagination, and the points of view offered by everyone who isn't me — professional astronauts and otherwise. My guess is you are someone's astronaut right now, able to help them see what's really important through the fog of their own atmosphere. Some of you reading this now have been an astronaut for me. Thank you. You make this pale blue dot a whole lot brighter.

J.D.

Answers

SUDOKU #81

7	8	1	9	5	2	4	3	6
9	4	3	7	6	8	1	5	2
2	5	6	4	3	1	8	7	9
4	6	8	3	1	7	9	2	5
1	7	9	2	4	5	6	8	3
3	2	5	8	9	6	7	1	4
5	1	7	6	2	4	3	9	8
6	3	2	1	8	9	5	4	7
8	9	4	5	7	3	2	6	1

SUDOKU #82

9	1	6	3	5	8	2	7	4
5	8	4	9	7	2	3	6	1
7	3	2	4	1	6	8	5	9
8	5	9	1	6	3	4	2	7
4	2	7	8	9	5	6	1	3
1	6	3	2	4	7	9	8	5
6	9	1	7	2	4	5	3	8
3	4	5	6	8	1	7	9	2
2	7	8	5	3	9	1	4	6

Brainteasers

Page 2 A pencil / He mined his own business
Page 3 The one with the dirty face looks over to the miner with the clean face and assumes his face is clean. The miner with the clean face looks over at the one with the dirty face and thinks his face is dirty too, thus cleaning his face with a handkerchief.
Page 6 Rebus Puzzle: 1. Sing in tune 2. Too big to fail 3. The writing's on the wall
Page 8 Coal

Send ideas and comments to:

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UNTIL NEXT TIME !